| | | | |
|---|---|---|---|
| | | min.<br>Number of cycles: 5 cycles.<br>Visual examination<br>Resistance | <br><br>No visible damage<br>$\Delta R \leq \pm(0.5\%+0.05\Omega)$<br>Chip jumper: 50mΩ max. |

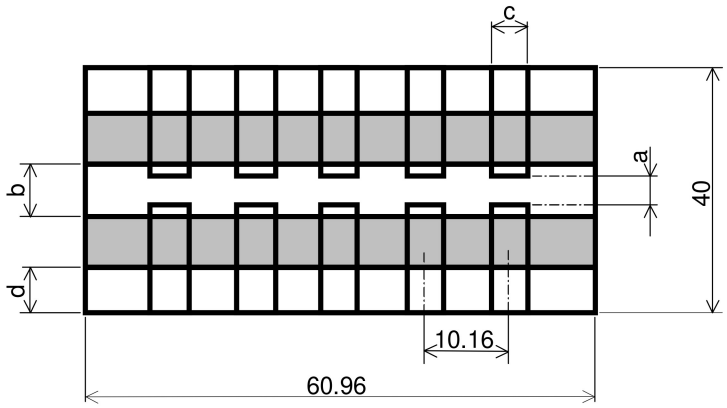
Table–4(3)

| No | Test items | Condition of test (JIS C 5201–1) | Performance requirements |
|---|---|---|---|
| 9 | Climatic sequence<br>–Dry heat | Sub–clause 4.23<br>Sub–clause 4.23.2<br>RMC1/32<br>Test temperature: +125 °C<br>RMC1/20,1/16S,1/16,1/10,1/8,1/4,1/2,1:<br>Test temperature: +155 °C<br>Duration: 16 h | |
| | –Damp heat, cycle<br>(12+12hour cycle)<br>First cycle | Sub–clause 4.23.3<br>Test method: 2<br>Test temperature: 55 °C<br>[Severity(2)] | |
| | –Cold | Sub–clause 4.23.4<br>Test temperature –55 °C<br>Duration: 2h | |
| | –Damp heat, cycle<br>(12+12hour cycle)<br>Remaining cycle | Sub–clause 4.23.6<br>Test method: 2<br>Test temperature: 55 °C<br>[Severity (2)]<br>Number of cycles: 5 cycles | |
| | –D.C. load | Sub–clause 4.23.7<br>The applied voltage shall be the rated voltage or the limiting element voltage whichever is the smaller.<br>Duration: 1 min.<br>Visual examination<br>Resistance | No visible damage<br>RMC1/32,1/20: $\Delta R \leq \pm (3\%+0.1\Omega)$<br>Others: $\Delta R \leq \pm (2\%+0.1\Omega)$<br>Chip jumper: 50mΩ max. |
| 10 | Mounting | Sub–clause 4.31<br>Substrate material: Epoxide woven glass<br>(RMC1may use Alumina substrate.)<br>Test substrate: Figure–3 | |
| | Endurance at 70 °C | Sub–clause 4.25.1<br>Ambient temperature: 70 °C ± 2 °C<br>Duration: 1000 h<br>The voltage shall be applied in cycles of 1.5 h on and 0.5 h off.<br>The applied voltage shall be the rated voltage or the limiting element voltage whichever is the smaller.<br>Examination at 48 h , 500 h and<br>1000 h:<br>Visual examination<br>Resistance | No visible damage<br>RMC1/32,1/20: $\Delta R \leq \pm (3\%+0.1\Omega)$<br>Others: $\Delta R \leq \pm (2\%+0.1\Omega)$<br>Chip jumper: 50mΩ max. |

Table–4(4)

| No | Test items | Condition of test (JIS C 5201–1) | Performance requirements |
|---|---|---|---|
| 11 | Mounting<br><br>Variation of resistance with temperature | Sub–clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure–3<br>Sub–clause 4.8<br>RMC1/32:<br>–55 °C / +20 °C<br>+20 °C / +125°C<br>RMC1/20,1/16S,1/16,1/10,1/8,1/4,1/2,1:<br>–55 °C / +20 °C<br>+20 °C / +155°C | As in Table–1 |
| 12 | Mounting<br><br>Damp heat, steady state | Sub–clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure–3<br>Sub–clause 4.24<br>Ambient temperature: 40 °C ± 2 °C<br>Relative humidity : 93 $^{+2}_{-3}$ %<br>a) 1st group: without voltage applied.<br>b) 2nd group: The d. c. voltage shall be applied continuously.<br>The voltage shall be accordance with Sub–clause 4.24.2.1 b). without polarizing voltage [4.24.2.1, c)]<br>Visual examination<br><br>Resistance | <br><br><br><br><br><br><br><br>No visible damage<br>Legible marking<br>RMC1/32,1/20: $\Delta R \leq \pm$ (3%+0.1Ω)<br>Others: $\Delta R \leq \pm$ (2%+0.1Ω)<br>Chip jumper: 50mΩ max. |
| 13 | Dimensions (detail)<br><br>Mounting<br><br>Endurance at upper category temperature | Sub–clause 4.4.3<br><br>Sub–clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure–3<br>Sub–clause 4.25.3<br>RMC1/32:<br>Ambient temperature:125 °C ± 2 °C<br>RMC1/20,1/16S,1/16,1/10,1/8,1/4,1/2,1:<br>Ambient temperature:155 °C ± 2 °C<br>Duration: 1000 h<br>Examination at 48 h, 500 h and 1000 h:<br>Visual examination<br>Resistance | As in Table–3<br><br><br><br><br><br><br><br><br><br><br><br>No visible damage<br>RMC1/32,1/20: $\Delta R \leq \pm$ (3%+0.1Ω)<br>Others: $\Delta R \leq \pm$ (2%+0.1Ω)<br>Chip jumper: 50mΩ max. |

8. Test substrate



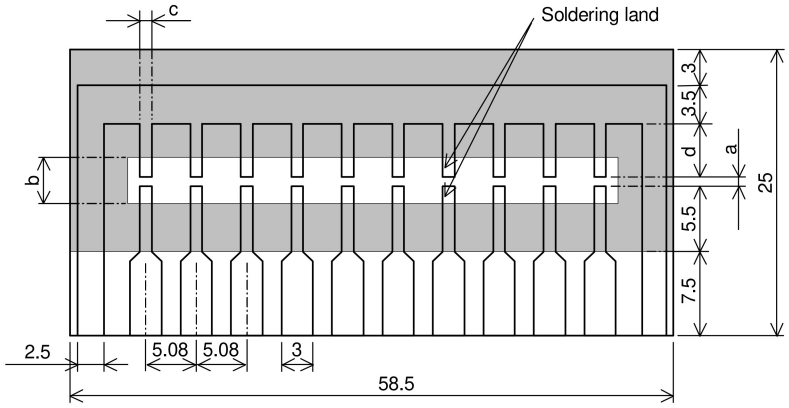

Unit: mm

:Copper clad

:Solder resist

| Style | a | b | c | d |
|---|---|---|---|---|
| RMC1/2 | 4.0 | 7.5 | 2.0 | 7.5 |
| RMC 1 | 5.0 | 9.0 | 4.5 | 7.5 |

RMC1/2, 1 TEST SUBSTRATE




Unit: mm

:Copper clad

:Solder resist

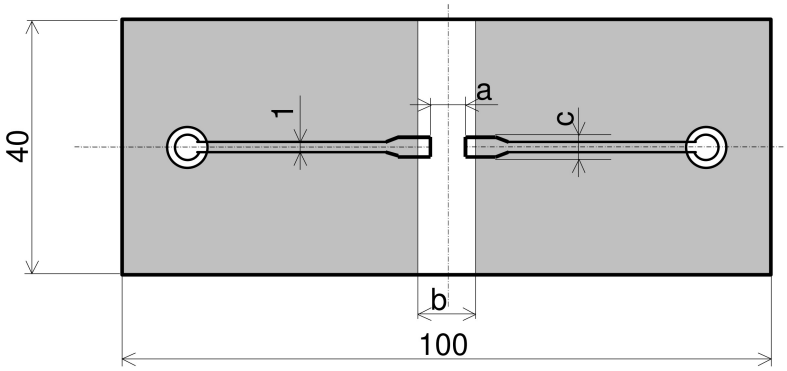
| Style | a | b | c | d |
|---|---|---|---|---|
| RMC1/32 | 0.2 | 0.56 | 0.2 | 5.3 |
| RMC1/20 | 0.3 | 1.5 | 0.45 | 5.2 |
| RMC1/16S | 0.6 | 1.9 | 0.7 | 4.9 |
| RMC1/16 | 1.0 | 3.6 | 1.0 | 4.5 |
| RMC1/10 | 1.2 | 4.0 | 1.5 | 4.3 |
| RMC1/8 | 2.1 | 3.9 | 1.7 | 3.4 |
| RMC1/4 | 2.2 | 5.0 | 2.9 | 3.3 |

RMC1/20, 1/16S, 1/16, 1/10, 1/8, 1/4 TEST SUBSTRATE

Figure–3

Remark 1). Material: Epoxide woven glass
Thickness: 1.6mm Thickness of copper clad: 0.035mm

2). In the case of connection by connector, the connecting terminals are gold plated.
However, the plating is not necessary when the connection is made by soldering.



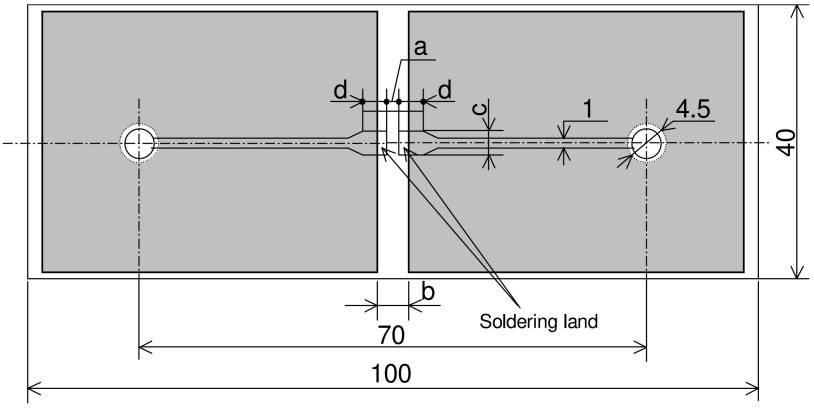

Unit: mm

:Copper clad

:Solder resist

| Style | a | b | c |
|---|---|---|---|
| RMC1/2 | 4.0 | 7.5 | 3.0 |
| RMC 1 | 5.0 | 9.0 | 4.0 |

RMC1/2, 1 BOUND STRENGTH OF THE END FACE PLATING TEST SUBSTRATE



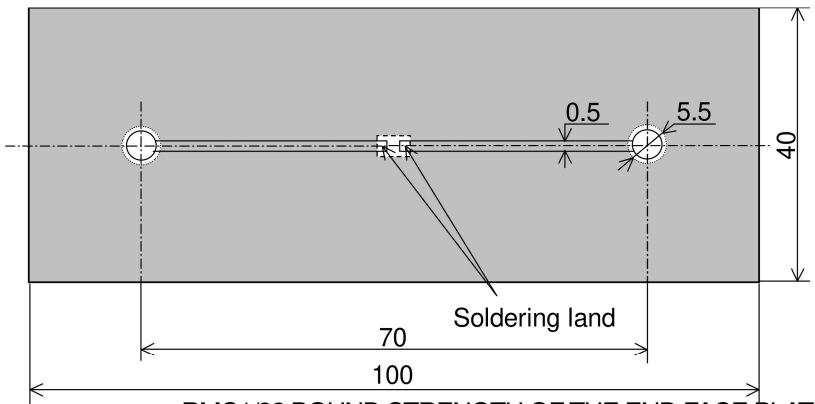

Unit: mm

:Copper clad

:Solder resist

| Style | a | b | c | d |
|---|---|---|---|---|
| RMC1/20 | 0.3 | 1.1 | 0.45 | 2.15 |
| RMC1/16S | 0.6 | 1.9 | 0.7 | 2.0 |
| RMC1/16 | 1.0 | 3.6 | 1.20 | 3.0 |
| RMC1/10 | 1.2 | 4.0 | 1.65 | 3.0 |
| RMC1/8 | 2.5 | 5.0 | 2.0 | 2.5 |
| RMC1/4 | 2.2 | 5.0 | 2.9 | 2.5 |

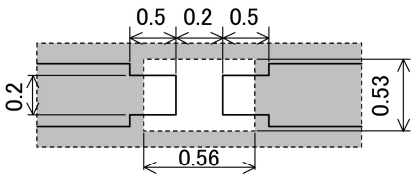
RMC1/20,1/16S,1/16,1/10,1/8,1/4 BOUND STRENGTH OF THE END FACE PLATING TEST SUBSTRATE




Unit: mm

:Copper clad

:Solder resist

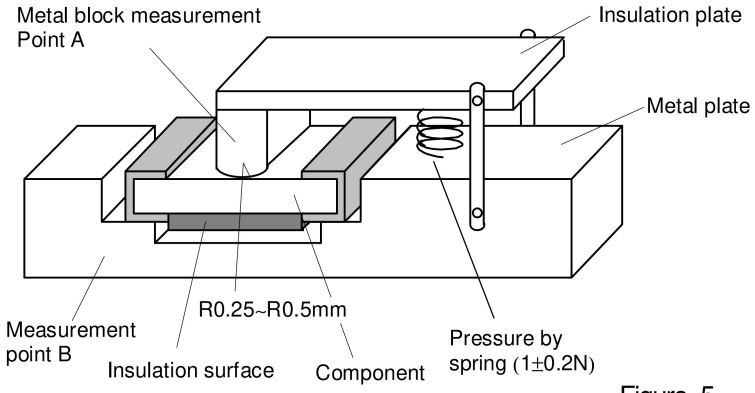



RMC1/32 BOUND STRENGTH OF THE END FACE PLATING TEST SUBSTRATE

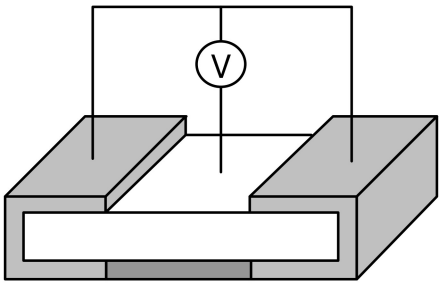
Remark 1). Material: Epoxide woven glass
Thickness: 1.6mm Thickness of copper clad: 0.035mm

Figure–4

· RMC1/16S,1/16,1/10,1/8,1/4,1/2,1




· RMC1/32, 1/20




Figure–5

9. Taping

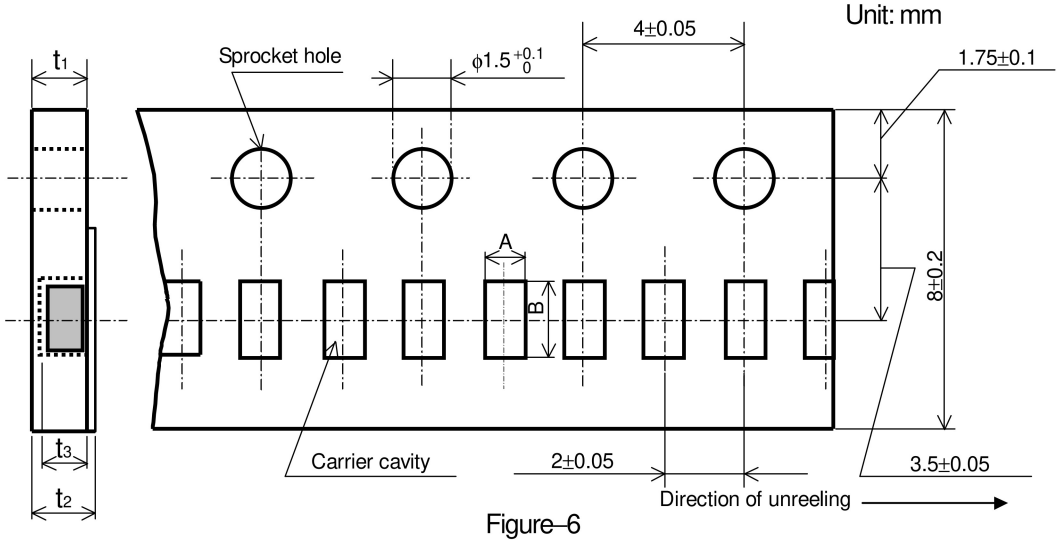
9.1 Applicable documents JIS C 0806–3: 2014, EIAJ ET–7200C: 2010

9.2 Taping dimensions

9.2.1 Press pocket taping (Paper taping, 8mm width, 2mm pitches)

Taping dimensions shall be in accordance with Figure–6 and Table–5.

Unit: mm



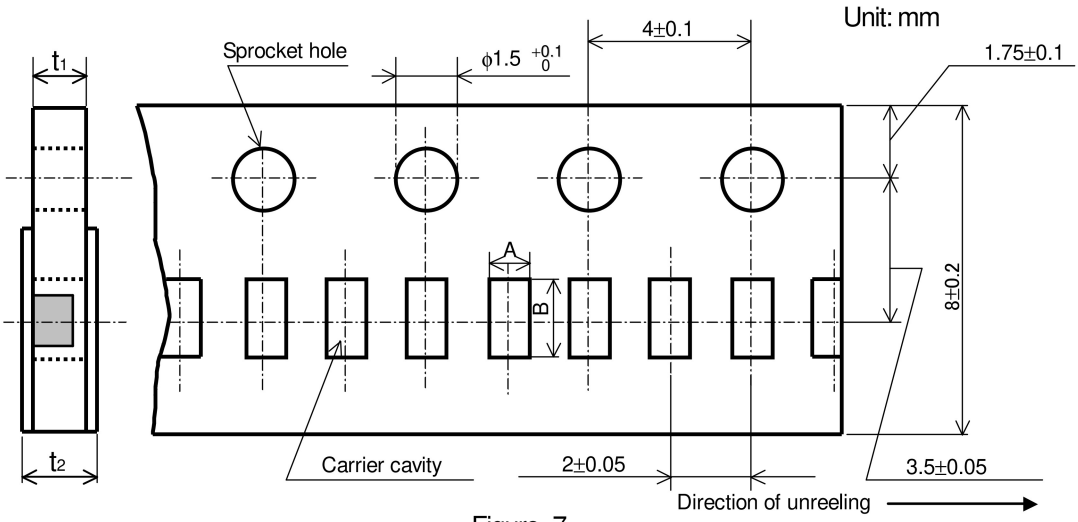

Figure–6

Table–5 Unit: mm

| Style | A | B | $t_1$ | $t_2$ | $t_3$ |
|---|---|---|---|---|---|
| RMC1/32 | 0.24±0.03 | 0.45±0.03 | 0.31±0.03 | 0.36±0.03 | 0.15±0.02 |
| RMC1/20 | 0.37±0.05 | 0.67±0.05 | 0.42±0.03 | 0.45±0.05 | 0.27±0.02 |

9.2.2 Paper taping (8mm width, 2mm pitches)

Taping dimensions shall be in accordance with Figure–7 and Table–6.



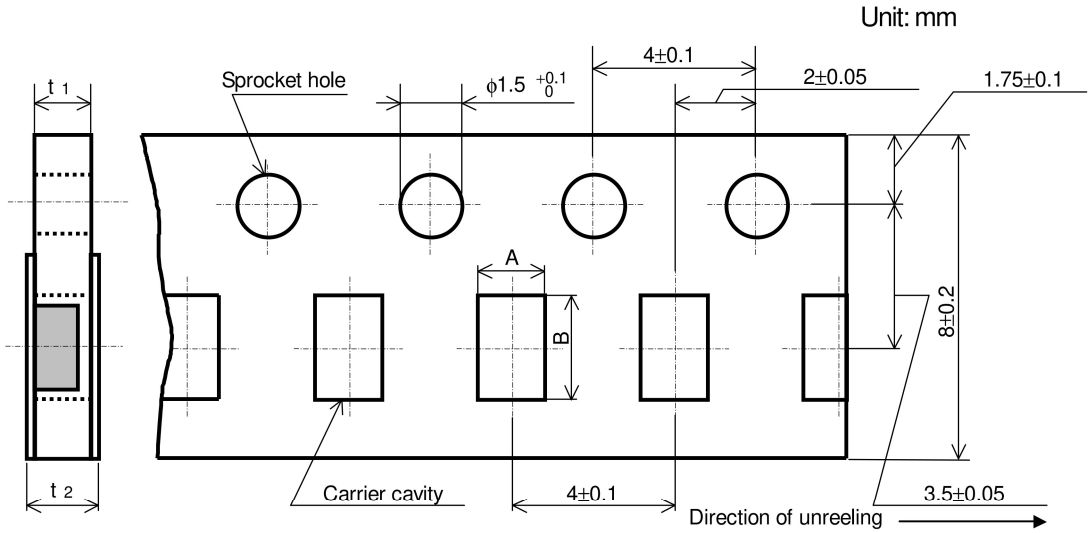

Figure–7

Table–6 Unit: mm

| Style | A | B | $t_1$ | $t_2$ |
|---|---|---|---|---|
| RMC1/16S | $0.65^{+0.05}_{-0.10}$ | $1.15^{+0.05}_{-0.10}$ | 0.4 ± 0.05 | 0.5max. |

9.2.3 Paper taping (8mm width, 4mm pitches)

Taping dimensions shall be in accordance with Figure–8 and Table–7.



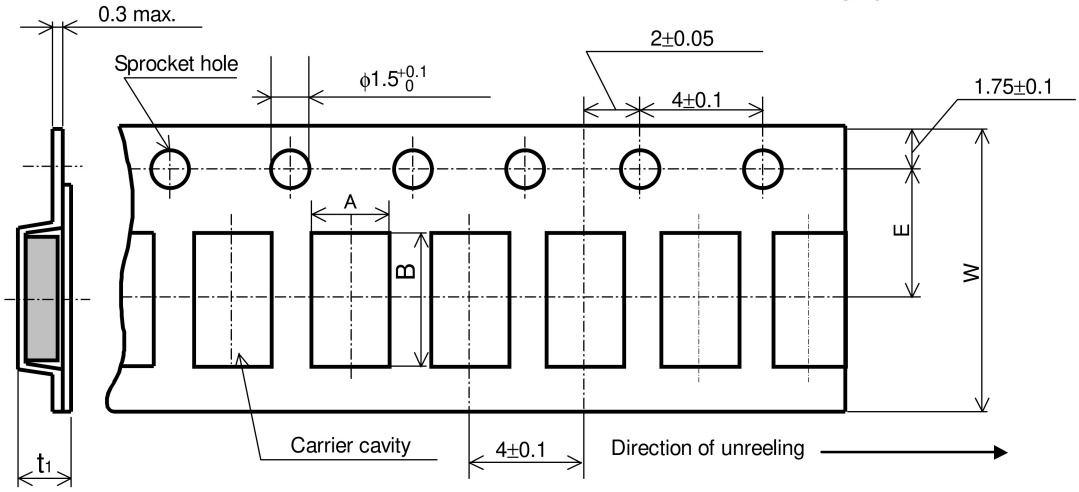

Figure–8

Table–7 Unit: mm

| Style | A | B | $t_1$ | $t_2$ |
|---|---|---|---|---|
| RMC1/16 | 1.15±0.15 | 1.9±0.2 | 0.6±0.1 | 0.8max. |
| RMC1/10 | 1.65±0.15 | 2.5±0.2 | 0.8±0.1 | 1.0max. |
| RMC1/8 | 2.00±0.15 | 3.6±0.2 | | |

9.2.4 Embossed taping dimensions shall be in accordance with Figure–9 and Table–8.

Unit: mm

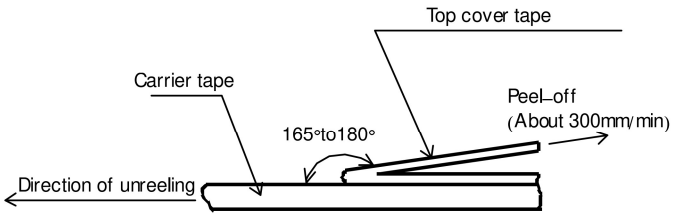



Figure–9

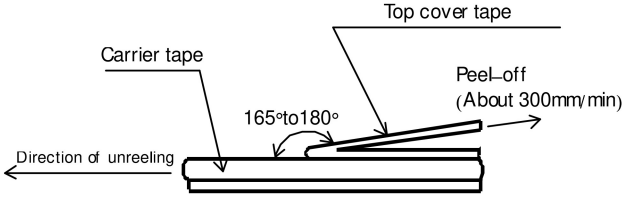
Table–8 Unit: mm

| Style | A | B | W | E | $t_1$ |
|---|---|---|---|---|---|
| RMC1/4 | 2.85±0.20 | 3.5±0.2 | 8.0±0.3 | 3.5±0.05 | 1.0±0.2 |
| RMC1/2 | 3.1±0.2 | 5.5±0.2 | 12.0±0.3 | 5.5±0.05 | 1.1±0.15 |
| RMC 1 | 3.6±0.2 | 6.9±0.2 | | | |

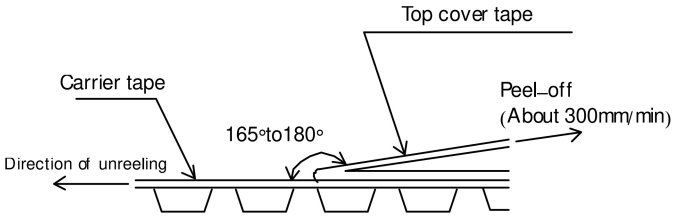
1). The cover tapes shall not cover the sprocket holes.
2). Tapes in adjacent layers shall not stick together in the packing.
3). Components shall not stick to the carrier tape or to the cover tape.
4). Pitch tolerance over any 10 pitches ±0.2mm.
5). The peel strength of the top cover tape shall be with in 0.1N to 0.5N on the test method as shown in the following RMC1/32,1/20: Figure–10, RMC1/16S, 1/16, 1/10, 1/8: Figure–11, RMC1/4, 1/2, 1: Figure–12.
6). When the tape is bent with the minimum radius for RMC1/32, 1/20, 1/16S, 1/16, 1/10,1/8, 1/4: 25 mm, or RMC1/2, 1: 30 mm, the tape shall not be damaged and the components shall maintain their position and orientation in the tape.
7). In no case shall there be two or more consecutive components missing.
The maximum number of missing components shall be one or 0.1%, whichever is greater.
8). The resistors shall be faced to upward at the over coating side in the carrier cavity.




Figure–10




Figure–11



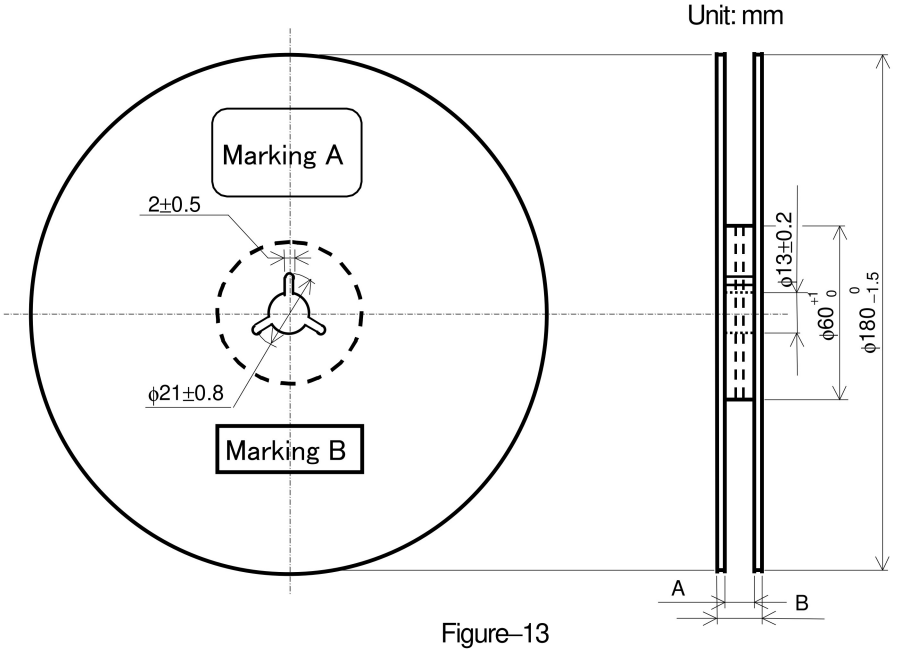

Figure–12

9.3 Reel dimension

Reel dimensions shall be in accordance with the following Figure–13 and Table–9.

Plastic reel (Based on EIAJ ET–7200C)

Unit: mm




Figure–13

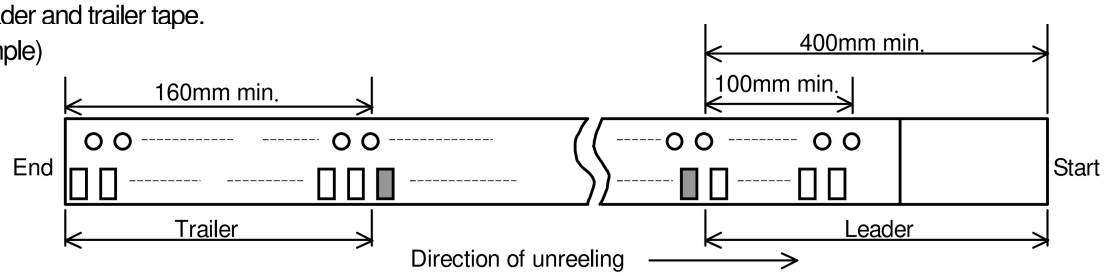
Table–9 Unit: mm

| Style | A | B | Note |
|---|---|---|---|
| RMC1/32, 1/20, 1/16S, 1/16, 1/10, 1/8, 1/4 | 9 $^{+1.0}_{0}$ | 11.4±1.0 | Injection molding |
| | | 13±1.0 | Vacuum forming |
| RMC1/2, 1 | 13 $^{+1.0}_{0}$ | 17±1.0 | Vacuum forming |

Note: Marking label shall be marked on a place of Marking A or two place of marking A and B.

9.4 Leader and trailer tape.

(Example)




Figure–14

10. Marking on package

The label of a minimum package shall be legibly marked with follows.

10.1 Marking A

(1) Classification

(Style, Temperature coefficient of resistance, Rated resistance, Tolerance on rated resistance, Packaging form)

(2) Quantity (3) Lot number (4) Manufacturer's name or trade mark (5) Others

10.2 Marking B (KAMAYA Control label)